



RESEARCH REPORT

Catalog number	99-005
Date:	April 21, 1999
Subject:	Immunization Staffing
To:	Board of Supervisors
From:	Sandi Wilson, Deputy County Administrator Christopher Bradley, Budget Manager
Prepared By:	Al Merlo, Budget Analyst

Issue:

Is the Maricopa County Public Health Department suitably staffed to meet current and projected workloads?

Background:

Maricopa County is mandated by law to provide immunizations to school-aged children (ages 18 and under). The department is required to track and report on these immunizations. These statutes are contained in the Arizona Revised Statutes under Section 36, Chapter 6 entitled "Public Health Control" in the following articles:

Article 2: Contagious Diseases, sections 36-621 through 36-631

Article 4: Communicable Disease Information, sections 36-661 through 36-670

Article 4.1: School Immunizations, sections 36-671 through 36-675

ARS 36-135 Childhood Immunization Reporting Systems

The Department of Public Health operates 14 immunization clinics throughout the Valley within various community sites, including several shopping malls. Additionally, the program operates a full-time clinic in the main Public Health Center. This clinic processes over 200 clients daily and may see as many as 400 patients on peak days. The demand for immunizations has increased over 108% in the past two years.

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The following factors contributed to the increase in immunizations:

- **Birth Rate Increase:**

Between 1993 and 1996, births in Maricopa County increased between 4% to 5% each year, totaling 48,128 births in 1996 (US Census Bureau, Statistical Abstract of the United States, 1998).

- **Disease Outbreak:**

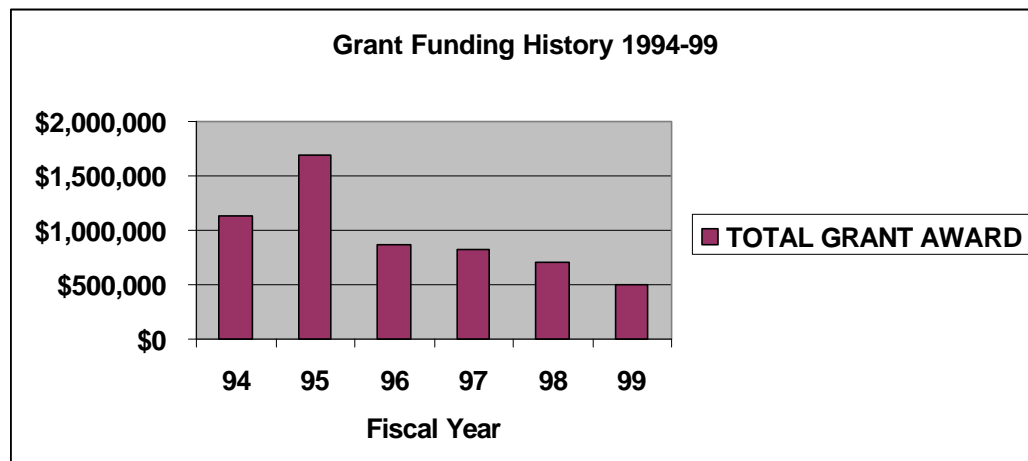
During the 1998 Measles Outbreak (October-December 1998), Public Health Services staff conducted emergency vaccination programs in schools where measles cases were identified. 7,500 doses were administered during the first month of the outbreak alone.

- **Revised Legislation:**

Revisions in state legislation have increased the number of immunizations required for school-aged children. Beginning with the 1997-98 school year, children must be immunized in order to enter kindergarten and first grade. Specifically, children must have a second immunization for Measles, Mumps, and Rubella (MMR), and three doses of Hepatitis B to enter these grades. This represents twice the number of immunizations mandated by law over the last year.

- **Decrease In Grant Funding:**

Public Health's grant awards have decreased dramatically within the last six years. During 1994 the the Centers for Disease Prevention grant funding was \$1,135,386. In 1999, the total grant funding was \$503,700. This is a decrease of approximately \$632,000 over the past five years. The following chart indicates the decrease.



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- **Potential County Savings:**

According to a cost/benefit analysis conducted by Dr. Susan Baum, Epidemic Intelligence Service Officer for the Centers for Disease Control, the societal costs of communicable disease are numerous. While only portions of immunizations are funded by the centers, this analysis reveals the benefits of the County to fund the immunization program.

In this study, the researcher found that a \$100,000 investment by Maricopa County in vaccinating children for **Hepatitis A** would result in a \$98,737 savings in the first year and \$724,766 per year savings to taxpayers over the course of a decade. In other words immunization avoids the possibility of costly medical examinations, investigations, hospitalization, and work loss.

Dr. Baum's analysis speaks in terms of societal costs. These cost are determined on the assumption that **Hepatitis A** outbreaks occur an average of every eight years in Maricopa County.

Discussion:

To assist in OMB's analysis and recommendations, a review of the current budget was performed and outlined below.

Current Budget for Agencies 860/861 Immunization Programs:

FY 1998-99 CURRENT BUDGET			
Agency	Org.	Title	Current Budget
860	8636	Immunization Nursing	663,203
861	8639	Immunization Prevention	1,655,250
Total:			\$ 2,318,453

FY 98-99 YEAR-END PROJECTIONS FOR AGENCY 860

Personal Services:

For FY 98-99, Public Health Services is projected to spend 96% of its personal services and supplies and services budget by the end of the fiscal year. In turn, there may be limited flexibility to help fund additional immunization staff within the department's base level personal services budget.

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AGENCY 860		FY- 98-99 YEAR-END PROJECTIONS				
OBJT	DESCRIPTION	CUR BUD	YTD BUD	YTD ACT	YR-END PROJ	YR-END VAR
701	REGULAR PAY	3,138,716	1,836,834	1,656,571	2,839,837	298,879
705	TEMPORARY PAY	6,321	3,703	15,594	26,733	(20,412)
710	SPECIAL PAY	5,000	2,927	9,409	16,130	(11,130)
750	FRINGE BENEFITS	581,819	340,625	285,655	489,693	92,126
780	SALARY ADJUSTMENT	42,684	27,194	-	-	42,684
790	OTHER PERSONAL SERVICES	8,396	4,716	12,506	21,439	(13,043)
795	P S INTER-FUND CREDIT (NEG)	(105,249)	(61,696)	(5,000)	(8,571)	(96,678)
796	P S INTER-FUND CHARGES	33,258	19,495	-	-	33,258
797	PERSONNEL SAVINGS (NEG)	(188,292)	(110,368)	-	-	(188,292)
TOTAL:		\$ 3,522,653	\$ 2,063,430	\$ 1,974,736	\$ 3,385,262	\$ 137,391

Supplies and Services:

AGENCY 860		GENERAL FUND			
CUR BUD	YTD BUD	YTD ACT	YR-END PROJ	YR-END VAR	
\$ 976,533	\$ 557,612	\$ 545,960	\$ 935,931	\$ 40,602	

FY 98-99 YEAR-END PROJECTIONS FOR AGENCY 861

For FY 98-99, the department's immunization program had a beginning fund balance of \$948,250. For the same fiscal year, the total grant award was \$707,000, leaving a projected year-end variance of \$43,030. Moreover, this indicates that the department has little flexibility to support an increase in staff for their immunization program.

AGENCY 861		IMMUNIZATION PREVENTION PROGRAM				
BEGINNING FUND BALANCE	FY 98-99 GRANT AWARD	TOTAL CURRENT BUDGET	YTD ACTUALS	YR-END PROJ.	YR-END VAR	
\$ 948,250	\$ 707,000	\$ 1,655,250	\$ 387,316	\$ 663,970	\$ 43,030	

Workload

The number of immunizations delivered by Public Health Services has increased over the past three years.

Table 1. IMMUNIZATION WORKLOAD			
	1996	1997	1998*
Number of clients	40,887	71,884	86,000
Number of immunizations	87,866	141,735	183,000
Percent increase over 1996		61%	108%
*Projected based on data from Quarters 1-3, 1998			

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Current Vacant Positions

Within the Agency 860 (General fund), there are five positions vacant budgeted positions available, totaling \$153,165.

As seen from the number of vacant budgeted positions the department does have some flexibility within their immunization programs and their overall general fund budget to fund additional immunization staff. However, the department claims that existing space issues has delayed the recruitment of staff to fill these positions.

AGENCY 860		GENERAL FUND				
		NO. OF VACANT				
HR POS	TITLE	ST DATE	DAYS	SALARY	BENEFITS	TOTAL
32732	ADMINISTRATIVE ASSTNT III	10/16/98	129	21,861	5,217	27,078
16459	COMMUNICBLE DISEASE INVS1	1/28/98	390	21,318	5,157	26,475
12216	EPIDEMIOLOGIST	8/21/98	185	28,710	5,969	34,679
16456	NURSE PRACTITIONER	8/31/98	175	34,118	6,564	40,681
18332	NA	9/15/98	160	19,314	4,937	24,251
TOTAL:				\$ 125,322	\$ 27,843	\$ 153,165

Within Agency 861 (Immunization Prevention Program), there are six vacant budgeted positions, totaling \$219,083.

AGENCY 861		IMMUNIZATION PREVENTION PROGRAM				
		NO. OF VACANT				
HR POS	TITLE	ST DATE	DAYS	SALARY	BENEFITS	TOTAL
30622	REGISTERED NURSE III	5/2/98	296	35,851	6,754	42,605
30859	LICENSED PRACTICAL NRS II	11/16/98	98	35,851	6,754	42,605
32415	CLERK IV	11/16/98	98	15,096	4,473	19,569
32418	LICENSED PRACTICAL NRS II	7/10/98	227	21,318	5,157	26,475
32420	REGISTERED NURSE III	11/19/98	95	39,087	7,110	46,197
32962	INTEGRATD SYS DSGN ANL I	10/29/98	116	34,974	6,658	41,632
TOTAL:				\$ 182,178	\$ 36,905	\$ 219,083

Current Staffing

According to the department, the current number of full time immunization nursing staff is inadequate for meeting this demand. For FY 98-99, there are only two full time immunization nurses dedicated to providing immunizations. The department claims that all other immunization program time is covered by administrative staff, volunteers, non-Immunization program staff, and nurses from a temporary-staffing agency.

Table 2 describes the current nurse staffing for the Immunization Program. In addition to the two full time nurses, the program hires temporary nursing help (3 FTEs) from Carrigan's Registry. Since May 1997, DPH spent in excess of

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\$146,000 for registry nurses to supplement nursing coverage at the Public Health Clinic and satellite locations. Hourly wages for these nurses range from \$22.75 to \$28.75. In contrast, full time nursing staff employed by Maricopa County cost approximately \$20.99 per hour (including benefits).

Further assistance is provided by other staff and volunteers. Program administrators (.5 FTE) often assist with emergency overflow of clients in need of immunizations, as do staff from other community health programs (3.75 FTE). This leaves their other duties neglected and places a hardship on staff in other programs.

Job descriptions for immunization nurses and data entry clerks follow:

Immunization Nurse

Leads immunization programs and administers immunizations. Transports vaccine supplies to program site and prepares site as needed to administer immunizations. Screens client immunization records to determine immunizations required. Reviews documentation from immunization program and prepares required reminder/recall documents. Refers clients, when applicable, to other community services agencies. Functions as resource to the unit and/or external agencies. Attends and participates in unit meetings, projects, and activities.

Data Entry Clerk

Enters client immunization records into database. Retrieves information from database regarding client immunization history. Translates and types forms, memos, reports into/from Spanish. Xeroxes and faxes documents when required. Interprets for Spanish speaking clients and translates for nurse(s). Answers and refers telephone calls and takes messages.

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**Table 2. Current Nurse Staffing for
Immunization Tasks**

Position Title	Number of FTEs
Full time Immunization nurses	2.00 FTE
Temporary immunization nurses (Carrigan's Registry)	3.00 FTE
Administrative staff	.50 FTE
Staff from other community health programs	3.75 FTE
Volunteers	.75 FTE
Total needed to meet demand	10 FTE

A similar staff shortage exists in the data entry portion of the Immunization Program. As indicated in Table 3, DPH is drawing on temporary data entry clerks in order to complete the mandated recording of immunizations. To date, DPH has spent \$25,000 to keep up with current immunizations and to handle a building backlog of cases.

Table 3. CURRENT STAFFING FOR DATA ENTRY TASKS	
Position Title	Number of FTEs
Full time data entry and field clerks	2.5 FTE
Temporary data entry clerks	1.3 FTE
Total needed to meet demand	3.8 FTE

Over the past three years, the number of nurse and data entry staff positions has decreased each year, while immunizations are increasing. Since 1995, the number of immunization nurses went from 5 FTE to 2 FTE. A reduction in data entry clerks leaves the program with 2.5 FTE clerks when it once had 5.5 FTE. (See Table 4.)

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Table 4. HISTORY OF IMMUNIZATION PROGRAM – TOTAL POSITIONS				
Position	1995	1996	1997	1998
Program Administrators	2	2	2	2
Immunization Program Nurses	5	5	4	2
Data Entry and Field Clerks	5.5	5.5	3.5	2.5
Other Support Staff*	4.5	4.5	4.5	4.5
Total	17	17	14	11
* Includes Vaccine Coordinator and administrative support positions.				

Funding Source

The Immunization Program is funded by a grant from the Centers for Disease Control and Prevention through the Arizona Department of Health Services and by County General funds. Despite the increase in demand for immunizations, the CDC has not increased funding over the past five years. Furthermore, the department expects funding to continue to decline in the future. (See Table 5.)

More importantly, this grant is intended to fund immunizations for children aged 0 to 2 years only and does not cover immunizations for all other school-aged children. As children 0-2 years make up only 17% of immunization clients, the grant is inadequate for meeting the total demand.

Table 5. GRANT FUNDING HISTORY 1994-98			
Year	Grant Award	Supplemental Awards	Total Award
1994	\$845,386	\$290,000 for computer automation	\$1,135,386
1995	\$1,267,290	\$422,046 for computer automation	\$1,689,336
1996	\$869,049		\$869,049
1997	\$830,000		\$830,000
1998	\$707,000		\$707,000
1999	\$503,700		\$503,700

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Temporary agency staff (both nurses and data entry staff) are being funded by the Immunization Program fund balance from previous years. Due to the high cost of temporary help and the decrease in grant funding, this fund balance will be used before the end of 1999.

County general funds pay for one immunization nurse, program administrators, and nurses in other community health programs. As mentioned earlier, the nurses from other programs assist Immunization Program nurses when necessary.

Staffing Analysis

Immunization Nurses

According to a time analysis completed by the Immunization Program staff, an immunization nurse can immunize one client every 13 minutes (under ideal conditions). This includes preparing the patient, giving the injection(s), and completing the initial paperwork. Further paperwork is processed by a data entry clerk.

		TOTAL	TOTAL	TOTAL
	PROCESSING	IMMUNIZATION	HOURS	IMMUNIZATION
CLIENTS	TIME (In Minutes)	HOURS	PER NURSE	NURSES REQUIRED
86,000	13	18,633	1,872	9.95

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Data Entry Clerk

According to state statutes, all immunizations must be documented and registered. This means that information for all 183,000 immunizations must be entered into databases. According to the Immunization Program staff analysis, each data entry clerk can enter approximately 200 records per day

	DAYS WORKED	RECORDS	TOTAL	
TOTAL ANNUAL	ANNUALLY PER	ENTERED DAILY	RECORDS	TOTAL CLERKS
IMMUNIZATIONS	CLERK	PER CLERK	ENTERED	REQUIRED
			ANNUALLY PER	
			CLERK	
183,000	234	200	46,800	3.91

Staffing Requirements

Table 6. HISTORY OF IMMUNIZATION PROGRAM POSITIONS AND REQUEST						
Position	1995	1996	1997	1998	Full Staffing (Proposed)	Request
Program Administrators	2	2	2	2	2.0	0
Immunization Program Nurses	5	5	4	2	10.0	8
Data Entry and Field Clerks	5.5	5.5	3.5	2.5	4.0	1.5
Other Support Staff*	4.5	4.5	4.5	4.5	4.5	0
Total	17	17	14	11	20.0	9.5
* Includes Vaccine Coordinator and administrative support positions.						

Total Costs

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The total costs required to meet the request for 9.5 FTE is \$410,339. This includes salaries (as outlined below in Table 7) and costs for start-up equipment. The supplies include 4 computers (\$2500 each) shared among the 8 immunizations nurses and one for the data entry clerks. For each employee, supplies needed includes: \$950 per year for mileage, \$250 for phone and office supplies.

Table 7. COSTS FOR ADDITIONAL POSITIONS		
Position	Cost per 1.0 FTE	Total
Immunization Nurse	\$43,833	\$350,664
Data Entry Clerk	\$23,393	\$35,089
Computer (shared), software, phone, mileage and supplies	\$2,588	\$24,586
Total		\$410,339

The DPH Immunization Program is in great need of additional funding for new positions in order to contain and prevent disease. Several findings contribute to this conclusion:

- While the number of immunizations and clients served has doubled since 1996, the number of immunization program positions has decreased.
- Staff from other programs and grant administration are consistently pulled away from their own responsibilities to assist the Immunization Program.
- Funding from grants decreased each year for the past six years.
- The Immunization Program fund balance money, which was carried over from previous years and used for stop-gap measures, will soon be depleted.
- The need for immunizations is likely to increase given the increase in Maricopa County births. This population will be in need of vaccinations over the next several years.
- The number of immunizations required by state law has recently increased. Therefore, the County is required to administer additional immunizations in upcoming years.

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- The societal costs for *not* immunizing children and adults are immense. Communicable diseases can cause illnesses which require expensive treatments, birth defects which require lifelong medical care, and sometimes death.

Conclusion(s):

- The department estimates that it will need an additional \$410,339 to meet its current immunization workload. After extensive analysis, it has determined that the department will need more immunization staff to meet current workloads, especially in the specific area of immunization nurses.
- Currently, the department has 11 vacant budgeted positions for their immunization program (agencies 860/861), totaling \$372,248 (includes benefits). Some of these positions have only been vacant for a short period of time, accounting for possible turnover factors and potential market issues. However, six of these positions have been vacant for approximately six months or better, totaling \$214,888 (includes benefits). Given the amount of time that these positions have been vacant, it is concluded that the department should aggressively recruit for positions to maintain optimum service levels. In turn, the department has suggested that the space problems have inhibited the recruitment of additional staff.
- Approximately 9 percent of the people who receive immunizations from public health are under the state of Arizona AHCCCS (Arizona Health Care Cost Containment System). Currently, the department is not recovering any costs from AHCCCS for the provision of immunizations. The department estimates that total reimbursement per AHCCCS client is approximately \$9. This relates to a potential \$69,660 in recovery costs. In turn, Public Health claims that the AHCCCS program was generally unresponsive, making it difficult to recover any costs. However, it is concluded that the department should continue its efforts to charge the AHCCCS program for immunization cost of its clients, since it is legally the responsibility of the State of Arizona. Furthermore, these additional cost savings will certainly help Public Health's efforts for meeting current workloads within its immunization program.

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Recommendation(s):

The Office of Management and Budget recommends the funding of 3.5 positions to help support the Public Health Services current Immunization program. This funding equates to the recruiting of two full-time immunization nurses plus 1.5 positions which fills the need for necessary data entry and field support. OMB also recommends that the department use any available funds from current vacant budgeted positions and the recovery of costs from AHCCCS to further support its immunization program.

The recommendation for the funding of these positions is contingent upon the departments capability to properly provide adequate working space for these individuals. Since the department claims that current space is at a minimum, OMB believes that it is in the best interest of Public Health and its clients to fund these recommended 3.5 positions upon moving into a new facility.

Six Vacant Budgeted Positions	AHCCCS Cost Recovery	Total Department Request	Recommended Funding	Recommended Positions
\$ 214,888	\$ 69,660	\$ 410,339	\$ 125,791	3.5

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